

***USER'S MANUAL***  
***Of***  
***AMD 785G & AMD SB710***  
***Based***  
***M/B For Socket AM3 Series Quad Core***  
***Processor***

***NO. G03-MA3785GP-F***

***Rev: 1.0***

**Release date: Aug., 2009**

**Trademark:**

- \* Specifications and information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

## Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



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## **CAUTION** Safety Environmental Instruction

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- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

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## Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	Aug., 2009

### Item Checklist

- ☒ AMD785G Platform Processor Chipset based motherboard
- ☒ CD for motherboard utilities
- ☒ User's Manual
- ☒ SATA Cable
- ☒ I/O back panel

## AMD AM3 Processor Family Cooling Solutions

As processor technology pushes to faster speeds and higher performance with increasing operation clock, thermal management becomes increasingly crucial while building computer systems. Maintaining the proper computing environment without thermal increasing is the key to reliable, stable, and 24 hours system operation. The overall goal is keeping the processor below its specified maximum case temperature. Heatsinks induce improved processor heat dissipation through increasing surface area and concentrated airflow from attached active cooling fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, AMD recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.

Please refer to the website below for collection of heatsinks evaluated and recommended for Socket AM3 processors by AMD. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support AM3 processors.

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# Chapter 1

## Introduction of AMD785G Motherboards

### 1-1 Features of motherboard

The AMD785G chipset motherboard series are based on the latest AMD785G Chipset and the SB710 chipset which supports the innovative AMD Phenom™ II X3 processor and AMD Phenom™ II X4 processors. With an integrated low-latency high-bandwidth DDRIII memory controller and a highly-scalable Hyper Transport technology-based system bus up to HT 3.0. AMD785G Platform Processor Chipset motherboard series deliver the outstanding system performance and professional desktop platform solution.

The AMD785G Series motherboards support new generation Socket AM3 processors with an integrated DDRIII memory controller for Dual channel DDRIII800 /DDRIII1066/DDRIII1333/DDRIII1600 DDRIII Module up to 8GB, also provide a DDRIII 128Mb GPU Memory. The motherboard is embedded with SB710 chipset of providing ULTRA ATA 133 connectors and Serial ATA2 with RAID 0, 1, 10 functions which support up to one IDE and six Serial ATA2 devices to accelerate hard disk drives and guarantee the data security without failure in advanced computing performance.

The AMD785G motherboards provide PCI-E Gigabit LAN chip which supports 10/100/1000Mbps data transfer rate. And the embedded ALC662 6-channel HD Audio CODEC is fully compatible with Sound Blaster Pro standards that offer you with the home cinema quality and satisfying software compatibility.

AMD785G Series motherboard series offer one PCI-Express2.0x16 graphics slots. One PCI-Express 2.0 x16by16 deliver up to 8Gbyte/sec data transfer rate at each relative direction. The AMD785G motherboards also carry two 32-bit PCI slots guarantee the rich connectivity for the I/O peripheral devices. This motherboard support Hybrid CrossFire function: when this function is selected through BIOS setting, the VGA Card on PE1 and the integrated graphics chip together will activate a Hybrid CrossFire with and the performance will be increased 15% to 75%.

Embedded USB controllers as well as capability of expanding to 8 of USB2.0 functional ports delivering 480Mb/s bandwidth of rich connectivity, these motherboards meet the future USB demands which are also equipped with hardware monitor function on system to monitor and protect your system and maintain your non-stop business computing.

Some special features--- **CPU Thermal Throttling/ CPU VID/OC-CON/ G.P.I Function/3D Audio/Windows7** in this motherboard are designed for power user to use the over-clocking function in more flexible ways. But please be caution that the over-clocking maybe causes the fails in system reliabilities. This motherboard provides the guaranteed performance and meets the demands of the next generation computing. But if you insist to gain more system performance with variety possibilities

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of the components you choose, please be careful and make sure to read the detailed descriptions of these value added product features, please get them in the coming section.

### 1-1.1 Special Features of Motherboard

#### **CPU Thermal Throttling Technology---**(The CPU Overheat Protection Technology)

To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter partially idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 40°C to 90°C). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset idle percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working. (For detail operating please read Section 3-11 Bi-turbo Configuration)

#### **CPU VID---** (Shift to Higher Performance)

The CPU voltage can be adjusted for the precisely over-clocking of extra demanding computing performance.

#### **OC-CON ---** (High-polymer Solid Electrolysis Aluminum Capacitors)

The working temperature is from 55 degrees Centigrade below zero to 125 degrees Centigrade, OC-CON capacitors possess superior physical characteristics that can be while reducing the working temperature between 20 degrees Centigrade each time, intact extension 10 times of effective product operation lives, at not rising degrees Centigrade of working temperatures each time a relative one, life of product decline 10% only too.

**G.P.I Function---** G.P.I is a technology with remarkable power saving function: when you are using a computer with G.P.I mold turned on, you save averagely 10.5W in power consumption in the whole process than normal computer without G.P.I technology.

#### **3D Audio**

OP with two-stage Butterworth filter and quadruple noninverting amplifier enhances bass effect under the 100MHz range to perfect audio effect, brings you stunning shock experience in video game, true-to-life simulated feeling when watching films and the greatest touch as that in the concert.

## 1-2 Specification

Spec	Description
<b>Design</b>	<ul style="list-style-type: none"> <li>● Micro ATX form factor; 4 layers PCB ;size:24.5cm*21.0cm</li> </ul>
<b>Chipset</b>	<ul style="list-style-type: none"> <li>● AMD785G North Bridge Chipset</li> <li>● AMD SB710 South Bridge Chipset</li> </ul>
<b>CPU Socket AM2</b>	<ul style="list-style-type: none"> <li>● Support AMD AM3 processors: AMD Phenom™ II X3 and AMD Phenom™ II X4 processors</li> <li>● Support HT 3.0</li> </ul>
<b>Memory Socket</b>	<ul style="list-style-type: none"> <li>● 240-pin DDRIII Module socket x 2</li> <li>● Support 2pcs DDRIII800/DDRIII1066/DDRIII1333/DDRIII1600 Modules Expandable to 8GB</li> <li>● Dual channel supported</li> </ul>
<b>GPU Memory</b>	<ul style="list-style-type: none"> <li>● Embedded 128Mb DDRIII GPU sideport Memory</li> </ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"> <li>● 1 pcs PCI-Express 2.0 x16 by 16 lane</li> <li>● 2pcs 32-bit PCI slots</li> </ul>
<b>Integrate IDE and Serial ATA2 RAID</b>	<ul style="list-style-type: none"> <li>● One IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s for 2 IDE Devices and for 6 Serial ATA2 ports providing 300 MB/sec data transfer rate with RAID 0, 1, 10 functions</li> </ul>
<b>Gigabit LAN</b>	<ul style="list-style-type: none"> <li>● Integrated PCI-E gigabit LAN chip.</li> <li>● Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000 Mb/s data transfer rate</li> </ul>
<b>6 CH-Audio</b>	<ul style="list-style-type: none"> <li>● Realtek ALC662 HD Audio 6-channel Audio Codec integrated</li> <li>● Support 6-channel 3D surround &amp; Positioning Audio</li> <li>● Audio driver and utility included</li> </ul>
<b>BIOS</b>	<ul style="list-style-type: none"> <li>● AMI 8MB DIP Flash ROM BIOS</li> </ul>
<b>Multi I/O</b>	<ul style="list-style-type: none"> <li>● PS/2 keyboard and PS/2 mouse connectors</li> <li>● Coaxial S/PDIF Out Connector x1</li> <li>● HDMI Connector x1</li> <li>● DVI Connector x1 (HDMI Connector and DVI Connector can not be used at the same time)</li> <li>● VGA Connector x1</li> <li>● USB2.0 port x 4 and header x 2</li> <li>● RJ-45 LAN Connector x1</li> <li>● COM header x1</li> <li>● Audio connector x1</li> <li>● Hard disk driver connector x 1/ SATA connector x 6</li> <li>● Serial Port header x1</li> <li>● HDMI_SPDIF header x1</li> </ul>



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## 1-3 Performance List

The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark testing results.)

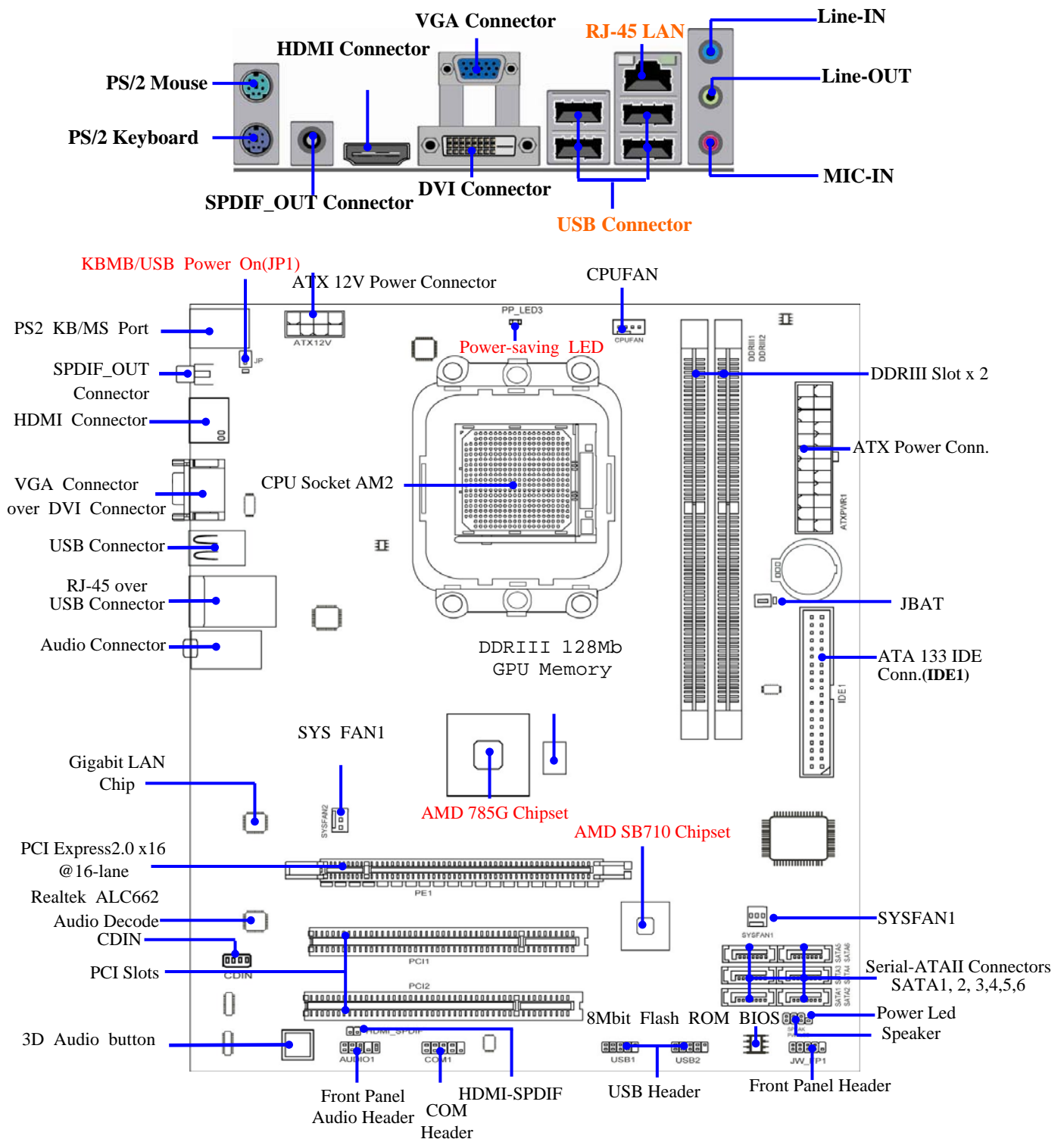
### Performance Test Report

CPU: HDX910WFK4DGI M3--22  
DRAM: APACER 2GX2 1333  
VGA Card: onboard  
Hard Disk Driver: Maxtor 80 G SATA  
BIOS: A01  
OS: WinXP (SP2)

	AMD 785G
3D Mark 2003	4826
3D Mark 2005	3858
AQUAMRK3	4536
PCMark2005	
System / CPU / Memory	5603/7893/4874
Graph / HDD	2441/4813
Content Creation Winstone 2004	29.3
Winbench 99 V2.0:	
Business /Hi-end Disk Winmark99	19600
SYSMark 2004: SISMark Rating(Internet Content Creation / Office Productivity )	
SYSMark 2004	353
3D Creation/2D Creation	210/548
Web publication	383
Communication/Document Creation	133/304
DATA Analysis	284
SISOFT Sandra 2009 : 1.CPU Arithmetic Benchmark 2.CPU Multi-Media Benchmark 3.Memory bandwidth Benchmark	
DHRYSTON ALU MIPS	51052
Whetstone FPU iSSE2 FLOPS	16322
Int/Float Buffered MB/S	10749/10743
Integer/Floating-Point IT/S	1390109/129619
UT2003 Benchmark (flyby/botmatch)	186.694687/110.620064
Quake3 DEMO1 /DEMO2 FPS	539.0/542.5
Super Pi (1M) Second	38.500S
CPUZ System / CPU Clock	4600+ 2400/112/200/1000

## 1-4 Layout Diagram

### Rear I / O for AMD785G



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## ***Jumpers***

<b>Jumper</b>	<b>Name</b>	<b>Description</b>	<b>Page</b>
JP1	Keyboard/USB Power On Enabled/Disabled	3-pin Block	P.7
JBAT	Clear CMOS Header	3-pin Block	P.7

## ***Expansion Slots***

<b>Socket/Slot</b>	<b>Name</b>	<b>Description</b>	<b>Page</b>
ZIF Socket AM2	CPU Socket	940-pin PGAB Athlon64 CPU Socket	P.9
DDRIII1,DDRIII2	DDRIII Module Socket	240-pin DDRIII Module Socket	P.10
PCI1;PCI2	PCI Slots	32-bit PCI Local Bus Expansion slots	P.11
PE1	PCI-Express2.0 x16 Slot	PCI-Express 2.0 x16 Expansion Slot	P.11

## ***Connectors***

<b>Connector</b>	<b>Name</b>	<b>Description</b>	<b>Page</b>
ATXPWR1	ATX Power Connector	24-pin Block	P.12
ATX12V	ATX 12V Power Connector	8-pin Block	P.13
KB	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
CN5/UL1 for USB	USB2.0 Port Connector	4-pin Connector	P.13
UL1 for RJ45LAN	Gigabit LAN Port Connector	RJ-45 Connector	P.13
AUDIO	8-CH HD Audio Connector	6- phone jack Conn.	P.13
IDE1	Primary IDE Connector	40-pin Block	P.13
SATA1, SATA2, SATA3,SATA4, SATA5,SATA6	Serial ATAII IDE Connectors	7-pin Connector	P.14
VGA1	D-Sub Connector	15-pin Connector	P.14
DVI	Digital Visual Interface	24-pin Connector	P.14
HDMI	High-Definition Multimedia	19-pin Connector	P.14
SPDIF_OUT1	Coaxial HDMI-SPDIF Out Connector	1-phone Connector	P.14

## ***Headers***

<b>Header</b>	<b>Name</b>	<b>Description</b>	<b>Page</b>
AUDIO1	Front Panel SPEAKER, MIC header	9-pin Block	P.15
USB1,USB2	USB Port Headers	9-pin Block	P.15
SPEAK1	PC Speaker connector	4-pin Block	P.15
PWR_LED1	Power LED	3-pin Block	P.15
JW_FP1 (Reset/IDE LED/Power Button)	Front Panel Header (including IDE activity LED/Reset switch / Power On Button lead)	9-pin Block	P.15
SYSFAN1/2	FAN Headers	3-pin Block	P.16
CPUFAN	FAN Header	4-pin Block	P.16
CDIN1	CD Audio-In Header	4-pin Block	P.16
COM1	Serial Port COM1 Header	9-pin Block	P.17
HDMI-SPDIF	SPDIF Out header	2-pin Block	P.17

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## Chapter 2

### Hardware Installation

**WARNING!** Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

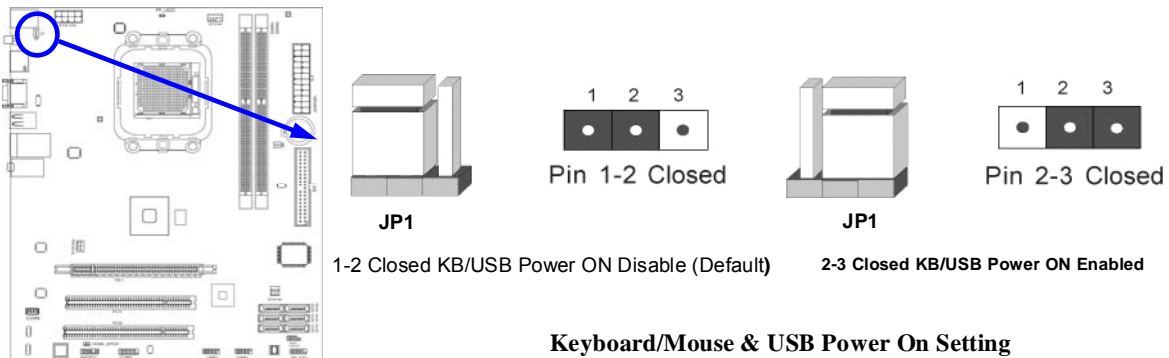
#### 2-1 Hardware installation Steps

Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver and Utility

#### 2-2 Checking Motherboard's Jumper Setting

(1) Keyboard/USB function Enabled/Disabled: JP1



(2) CMOS RAM Clear (3-pin) : JBAT

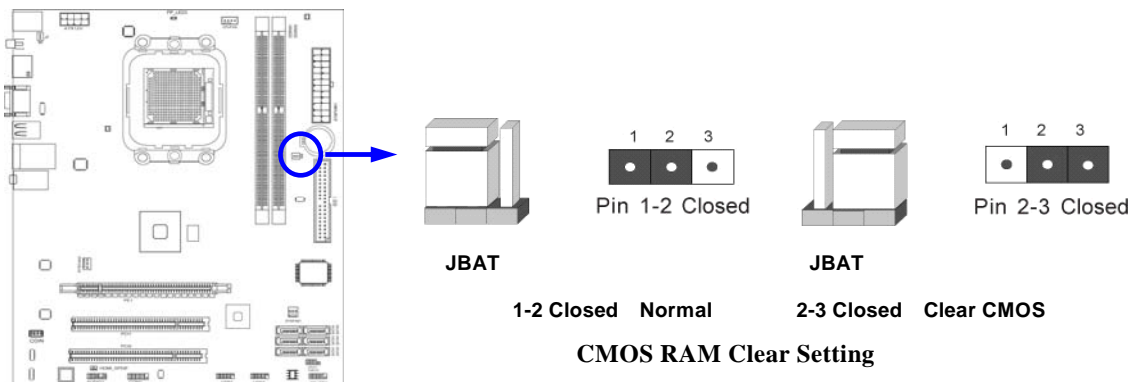
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

**Note: When should clear CMOS**

1. *Troubleshooting*
2. *Forget password*
3. *After over clocking system boot fail*



## 2-3 Install CPU

### 2-3-1 Glossary

**Chipset (or core logic)** - two or more integrated circuits which control the interfaces between the system processor, RAM, I/O devices, and adapter cards.

**Processor socket** - the socket used to mount the system processor on the motherboard.

**Slot (PCI-E, PCI, RAM)** - the slots used to mount adapter cards and system RAM.

**PCI** - **P**eripheral **C**omponent **I**nterconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

**PCI Express2.0**- Peripheral Component Interconnect Express2.0, developed in 2003, the speed of each line doubled from the previous PCI-E of 2.5 Gbps to 5 Gbps.

**Serial Port** - a low speed interface typically used for mouse and external modems.

**Parallel Port** - a low speed interface typically used for printers.

**PS/2** - a low speed interface used for mouse and keyboards.

**USB** - **U**niversal **S**erial **B**us - a medium speed interface typically used for mouse, keyboards, scanners, and some digital cameras.

**Sound** (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, game controllers, and MIDI sound devices.

**LAN** (interface) - **L**ocal **A**rea **N**etwork - the interface to your local area network.

**BIOS** (**B**asic **I**nput/**O**utput **S**ystem) - the program logic used to boot up a computer and establish the relationship between the various components.

**Driver** - software, which defines the characteristics of a device for use by another device or other software.

**Processor** - the "central processing unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"

**Front Side Bus Frequency** - the working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.

**CPU L2 Cache** - the flash memory inside the CPU, normal it depend on CPU type.

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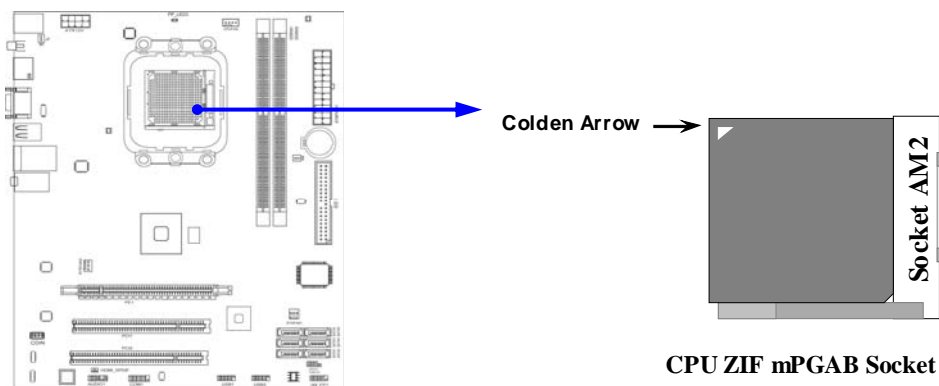
### 2-3-2 About AMD AM3 CPU Installation

This motherboard provides a socket AM2 surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA940 socket supports AMD AM3 series processors.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

**WARNING!** Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.



When you put the CPU into the ZIF socket, No force required to insert of the CPU, and then press the level to locate position slightly without any extra force.

## 2-4 Install Memory

This motherboard provides two 240-pin DDRIII DUAL INLINE MEMORY MODULES (DIMM) socket for DDRIII memory expansion to maximum memory volume of 8 GB DDR SDRAM.

### Valid Memory Configurations

Bank	240-Pin DIMM	PCS	Maximum Capacity
DDRIII1	DDRIII800/DDRIII1066/DDRIII1333/DDRIII1600	X1	4GB
DDRIII2	DDRIII800/DDRIII1066/DDRIII1333/DDRIII1600	X1	4GB
Total	System Memory (Max 4 GB)	2	8GB

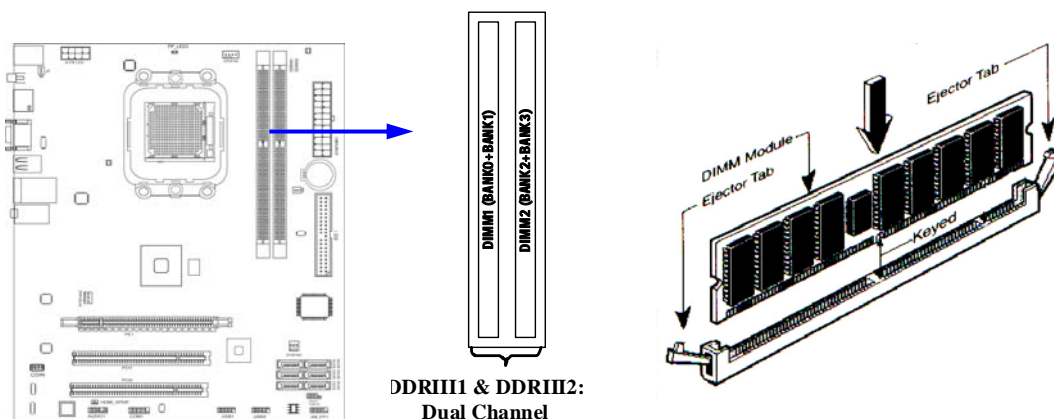
### **Recommend DIMM Module Combination:**

1. One DDRIII Memory Module ----Plug in DDRIII1
2. Two DDRIII Memory Modules---Plug in DDRIII1 and DDRIII 2 for Dual channel function

### **Dual channel Limited!**

1. Dual channel function only supports when 2 DDRIII Modules plug in either both DDRIII1 & DDRIII2.
2. Memory modules plugged in DDRIII1 & DDRIII2 must be of the same type, same size, and same frequency for dual channel function.

Install DDRI II modules to your motherboard is not difficult, you can refer to figure below to see how to install a 240-Pin DDRIII800/DDRIII1066/DDRIII1333/DDRIII1600 module.



### **NOTE!**

When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indentation on both sides.

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## 2-5 Expansion Cards

### 2-5-1 Procedure For Expansion Card Installation

1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.
3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

### 2-5-2 Assigning IRQs For Expansion Card

Some expansion cards need an IRQ to operate. Generally, an IRQ must exclusively assign to one use. In a standard design, there are 16 IRQs available but most of them are already in use.

#### Standard Interrupt Assignments

IRQ	Priority	Standard function
0	N/A	System Timer
1	N/A	Keyboard Controller
2	N/A	Programmable Interrupt
3 *	8	Communications Port (COM2)
4 *	9	Communications Port (COM1)
5 *	6	Sound Card (sometimes LPT2)
6 *	11	Floppy Disk Controller
7 *	7	Printer Port (LPT1)
8	N/A	System CMOS/Real Time Clock
9 *	10	ACPI Mode when enabled
10 *	3	IRQ Holder for PCI Steering
11 *	2	IRQ Holder for PCI Steering
12 *	4	PS/2 Compatible Mouse Port
13	N/A	Numeric Data Processor
14 *	5	Primary IDE Channel
15 *	1	Secondary IDE Channel

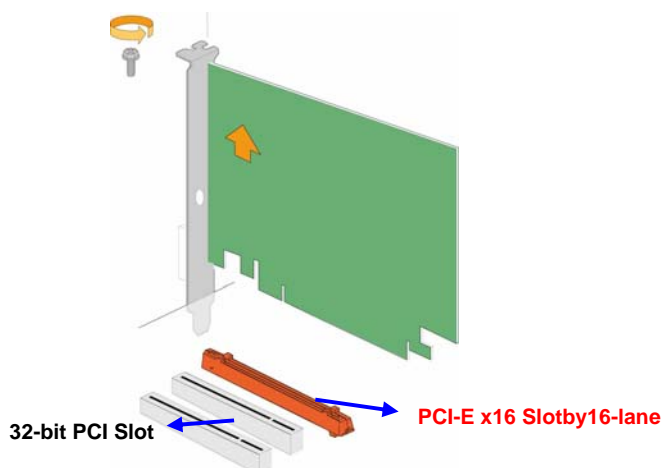
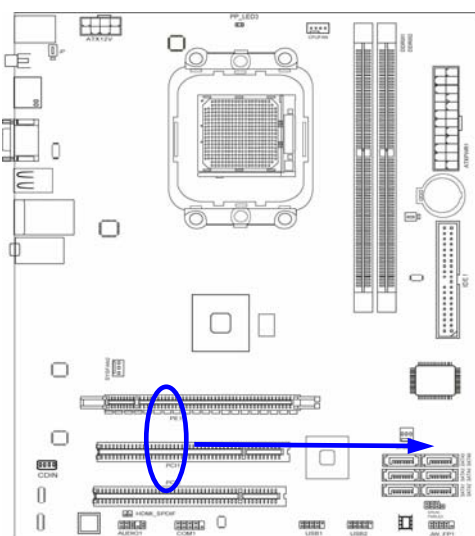
\* These IRQs are usually available for ISA or PCI devices.

<b>NOTE!</b>	If using PCI cards on shared slots, make sure that the drivers support "Shared IRQ" or that the cards don't need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.
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### 2-5-3 Expansion Slot

One PCI-Express2.0 x16@16 lane graphic slot offer 8Gbyte/sec data transfer rate at each relative direction and up to 16Gbyte/sec concurrent bandwidth at full speed. Fully compliant to the *PCI Express Base Specification revision2.0*, support PCI Express VGA card, and other PCI Express device. Two 32-bit PCI slots guarantee the rich connectivity for the I/O of peripherals.





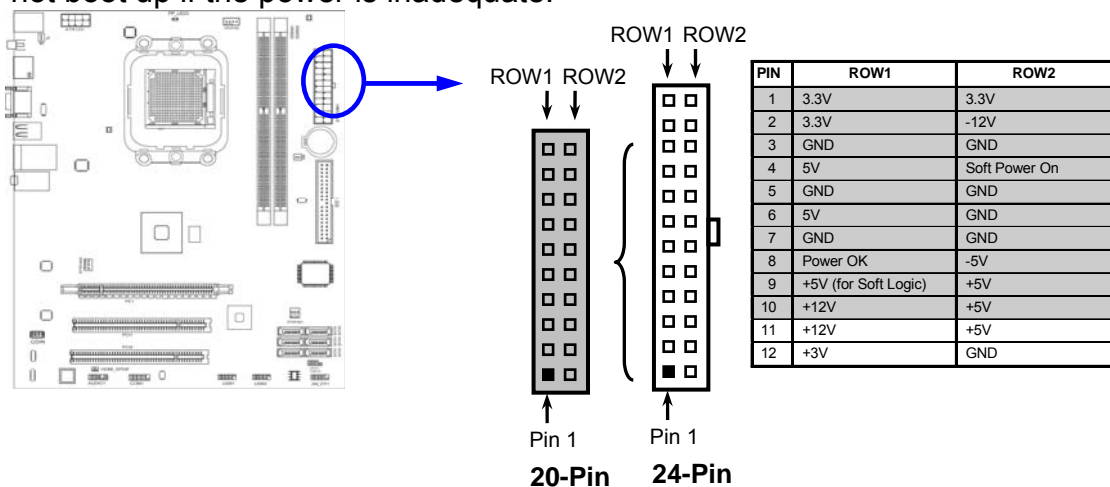
## 2-6 Connectors, Headers

### 2-6-1 Connectors

#### (1) Power Connector (24-pin block): ATXPWR1

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

- \*\* We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.
- \*\* If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.

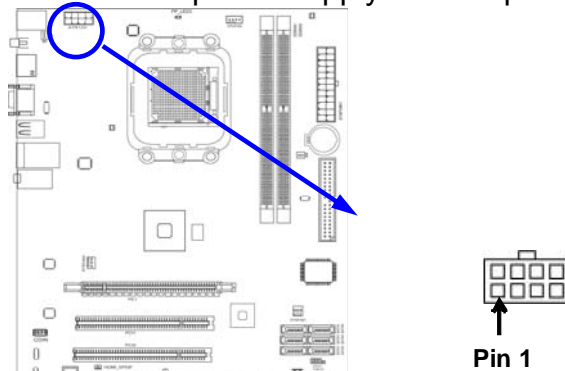


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**(2) ATX 12V Power Connector (8-pin block) : ATX12V**

This is a new defined 8-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully supports Socket AM2+ processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



**(3) PS/2 Mouse & PS/2 Keyboard Connector: KB**

The connectors are for PS/2 keyboard and PS/2 Mouse.

**(4) USB Port connector: CN5/ UL1 for USB**

The connectors are 4-pin connector that connects USB devices to the system board.

**(5) LAN Port connector: UL1 for RJ-45 LAN**

The connector is standard RJ45 connector for Network. It supports 10M/100Mb/1000Mb s data transfer rate

**(6) Audio Line-In, Lin-Out, MIC Connector: AUDIO**

These Connectors are 3 Phone-Jack for LINE-OUT, LINE-IN, MIC audio connections.

**Line-in: (BLUE)**

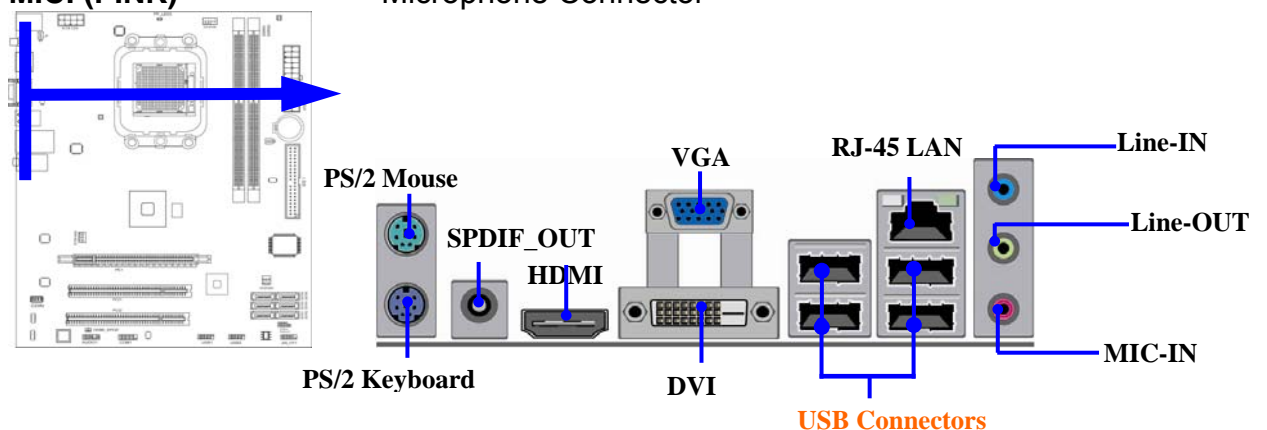
Audio input to sound chip

**Line-out: (GREEN)**

Audio output to speaker

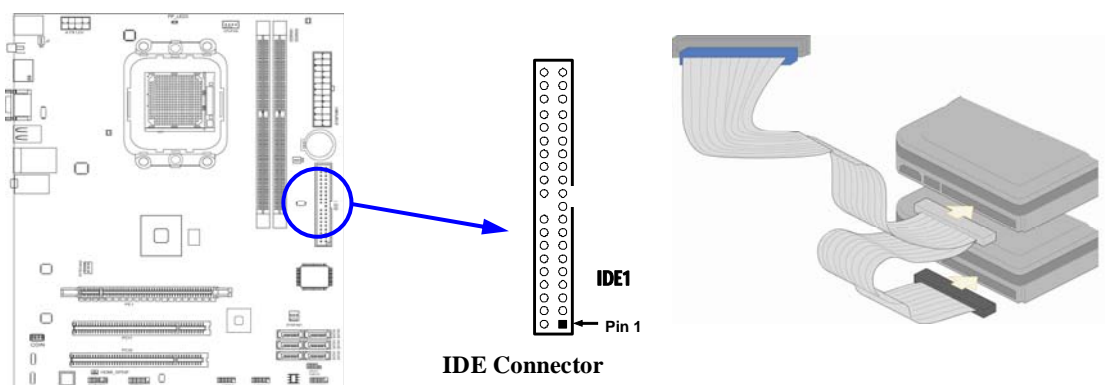
**MIC: (PINK)**

Microphone Connector



**(7) Primary IDE Connector (40-pin block): IDE1**

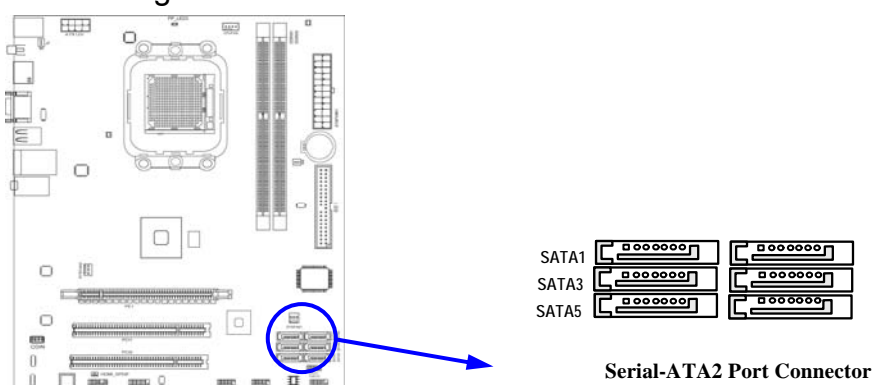
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.



- Two hard disks can be connected to each connector. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For performance issues, we strongly suggest you don’t install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

**(8) Serial-ATAII Port connector: SATA1, SATA 2, SATA3, SATA4, SATA5, SATA6**

This connector supports the provided Serial ATA2 IDE hard disk cable to connecting the motherboard with serial ATAII hard disk.



**(9) D-Sub 15-pin Connector: VGA**

VGA connector is the 15-pin D-subminiature female connector; it is for the display devices, such as the CRT monitor, LCD monitor and so on.

**(10) Digital Visual Interface: DVI1**

This interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors.

**(11) High-Definition Multimedia Interface: HDMI**

This point-to-point interface is for audio and video signals designed as a single-cable solution for home theater and consumer electronics equipment.

**(12) SPDIF Out connectors: SPDIF\_Out1**

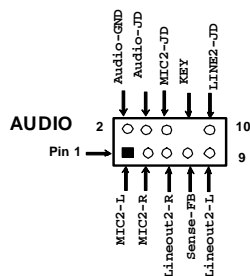
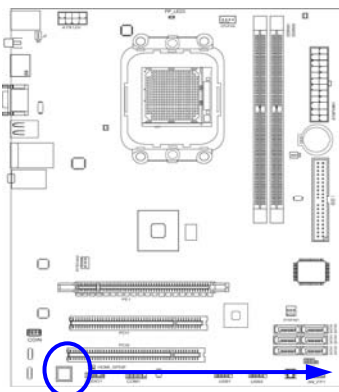
The SPDIF output is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby digital decoder. Use this feature only when your stereo system has digital input function.

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## 2-6-2 Headers

### (1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO

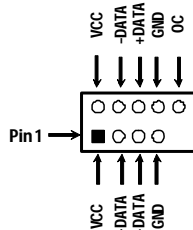
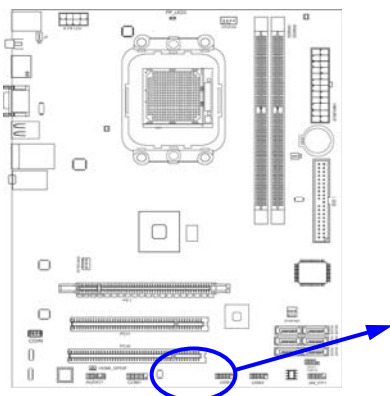
These headers connect to Front Panel Line-out, MIC connector with cable.



Line-Out, MIC Headers

### (2) USB Port Headers (9-pin): USB1/USB2

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.



USB Port Headers

### (3) Speaker connector: SPEAK1

This 4-pin connector connects to the case-mounted speaker. See the figure below.

### (4) Power LED: PWR LED/PWRLED1

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

### (5) IDE Activity LED: HD LED

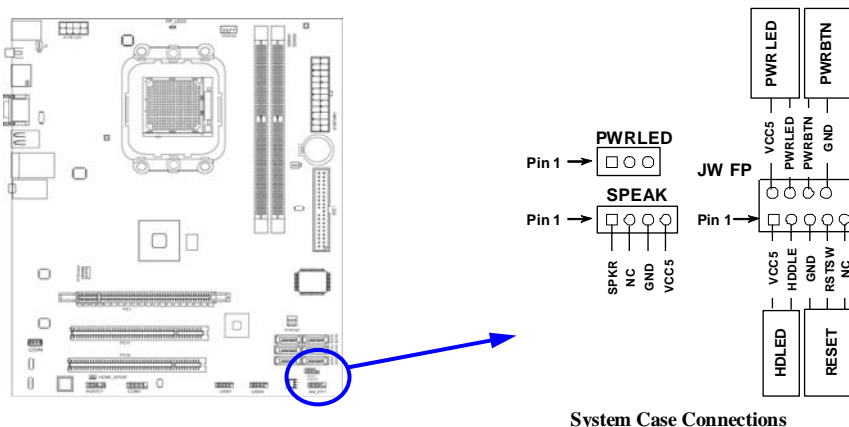
This connector connects to the hard disk activity indicator light on the case.

### (6) Reset switch lead: RESET

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

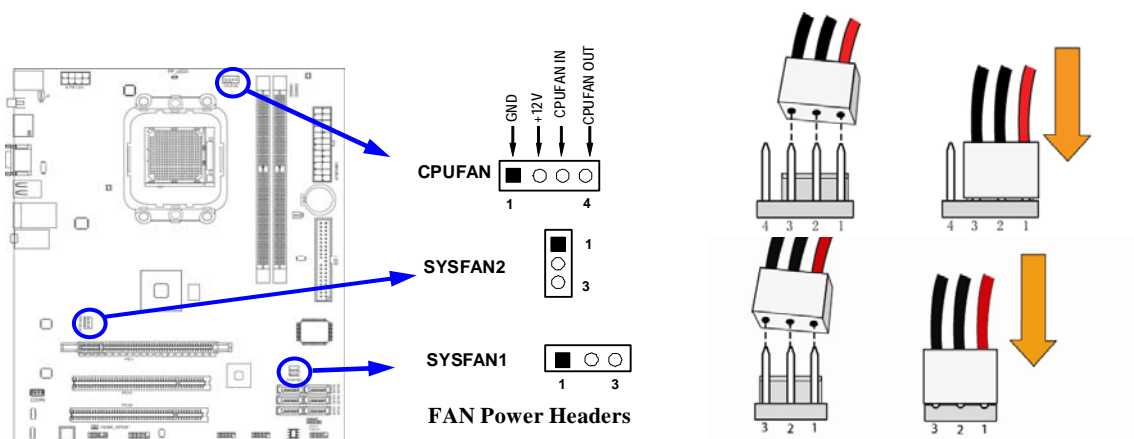
### (7) Power switch: PWR BTN

This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



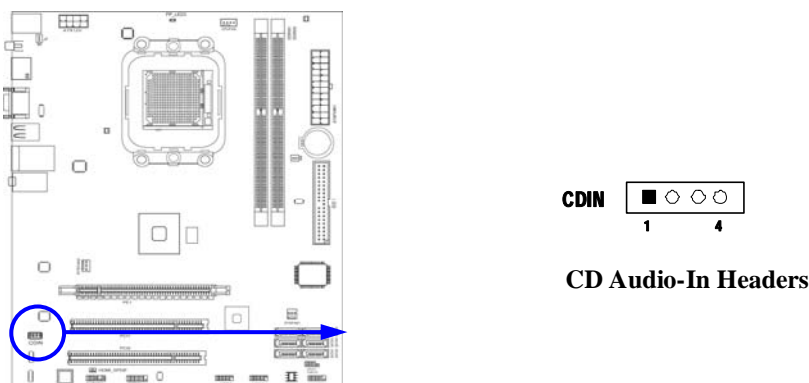
### (8) FAN Power Headers: SYSFAN1 (3-pin), SYSFAN2 (3-pin), CPUFAN (4-pin)

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



### (9) CD Audio-In Headers (4-pin): CDIN1

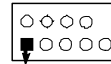
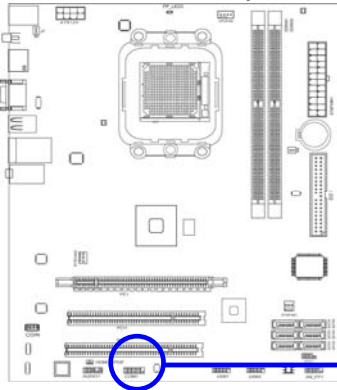
CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



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**(10) Serial COM Port header: COM1**  
COM1 is the 9-pin block pin-header.

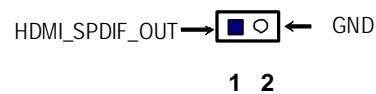
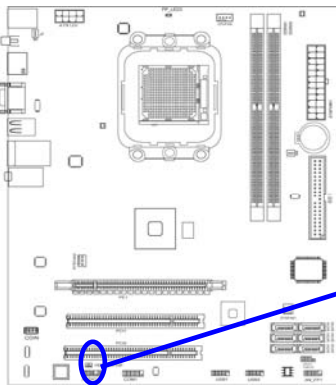


Pin1

**Serial COM Port 9-pin Block**

**(11) HDMI-SPDIF Out header: SPDIF Out**

The SPDIF output is capable of providing digital audio to external speakers or compressed AC3 data to an external Dolby digital decoder. Use this feature only when your stereo system has digital input function. Some of the VGA Card need connect SPDIF-IN Connector, so its HDMI Port can make sounds .



**HDMI\_SPDIF Header**

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## 2-7 Starting Up Your Computer

1. After all connection are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
  - a. Your monitor.
  - b. Other external peripheral (Printer, Scanner, External Modem etc...)
  - c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test is running, the BIOS will alarm beeps or additional message will appear on the screen.

If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click "**Start**" button, click "**Shut down**" and then click "**Shut down the computer?**" The power supply should turn off after windows shut down.



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## Chapter 3

### Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/- keys when you want to modify the BIOS parameters for the active option.

### 3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

**Press <Del> to enter Setup or press <F1> to load default values and continue**

### 3-2 Getting Help

#### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

#### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.



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### 3-3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from fourteen setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

CMOS Setup Utility-Copyright © 1985-2005, American Megatrends, Inc.

<b>Standard BIOS Features</b> <b>Advanced BIOS Features</b> <b>Advanced Chipset Features</b> <b>Integrated Peripherals</b> <b>Power Management Features</b> <b>Miscellaneous Control</b> <b>PC Health Status</b>	<b>Thermal Throttling Function</b> <b>Power User Overclock Settings</b> <b>BIOS Security Features</b> <b>Load Optimal Defaults</b> <b>Load Standard Defaults</b> <b>Save Charges and Exit</b> <b>Discard Charges and Exit</b>
↑↓ : Move    Enter: Select    +/-: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

Figure 3-1

#### Standard BIOS Features

Use this Menu for basic system configurations.

#### Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

#### Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

#### Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

#### Power Management Features

Use this menu to specify your settings for power management.

#### Miscellaneous Control

Use this menu to specify your settings for Miscellaneous Control.

#### PC Health Status

This entry shows your PC health status.

#### Thermal Throttling Function

The selection is set for activating the active CPU Thermal Protection by flexible CPU loading adjustment in the range of temperature you define.

#### Power User Overclock Settings

Use this menu to specify your settings (frequency, Voltage) for overclocking demand

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## BIOS Security Features

Use this menu to set supervisor password and user password.

### Load Standard Defaults

This menu uses a minimal performance setting, but the system would run in a stable way.

### Load Optimal Defaults

Use this menu to load the BIOS default values these are setting for optimal performances system operations for performance use.

### Save Changes and Exit

Save CMOS value changes to CMOS and exit setup.

### Discard Changes and Exit

Abandon all CMOS value changes and exit setup.

## 3-4 Standard BIOS Features

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

**CMOS Setup Utility-Copyright © 1985-2005, American Megatrends, Inc.**  
**Standard BIOS Features**

Language	English	Item Help
System Date	Fri 07/24/2009	
System Time	00:50:22	Select the current default language used by the BIOS.
IDE Channel 0 Master	Not Detected	
IDE Channel 0 Slave	Not Detected	
SATA Channel 1	Not Detected	
SATA Channel 2	Not Detected	
SATA Channel 3	Not Detected	
SATA Channel 4	Not Detected	
SATA Channel 5	Not Detected	
SATA Channel 6	Not Detected	
Floppy A	1.44MB 3.5	
System Memory Size: 768MB		
↑↓ : Move    Enter: Select    +/-: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults		

### Language

Use this item to select the current default language used in BIOS. The Optional settings are: Chinese (GB): English.

### System Date

The date format is <day><month><date><year>.

**Day** Day of the week, from Sun to Sat, determined by BIOS. Read-only.

**Month** The month from Jan. through Dec.

**Date** The date from 1 to 31 can be keyed by numeric function keys.

**Year** The year depends on the year of the BIOS.

### System Time

The time format is <hour><minute><second>.

### IDE Master / Slave

SATA Channel 1, 2, 3, 4, 5, 6

While entering setup, BIOS auto detect the presence of IDE devices. This displays the status of auto detection of IDE devices.

**Type:** The optional settings are: Not Installed; Auto; CD/DVD and ARMD

**LBA/Large Mode:** The optional settings are Auto; Disabled.

Disabled: Disables LBA Mode.

Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.

**Block (Multi-Sector Transfer):** The optional settings are: Disabled and Auto.

Disabled: The Data transfer from and to the device occurs one sector at a time.

Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it.

**PIO Mode: the optional settings are:** Auto, 0, 1, 2, 3 and 4.

**DMA MODE:** the optional settings are Auto, SWDMAn, MWDMAAn, UDMAAn.

**S.M.A.R.T.:** This option allows you to enable the HDD S.M.A.R.T Capability (Self-Monitoring, Analysis and Reporting Technology). The optional settings are Auto; Disabled; and ENABLED.

**32 Bit Data Transfer:** the optional settings are: Disabled and Enabled.

## Floppy A

This item is for specific floppy disk drive settings. Select according to the specification of the floppy disk you use.

## System Memory

This item will show information about the memory modules(s) installed.

## 3-5 Advanced BIOS Features

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Advanced BIOS Features

Advanced Settings	Help Item
<b>WARNING: Setting wrong values in below sections May cause system to malfunction</b>	Configure CPU
CPU Configuration <b>Press Enter</b> Quick Boot Enabled Boot up Num-Lock On ACPI APIC Support Enabled MPS Revision Enabled Quiet Boot Disabled	
↑↓ : Move    Enter: Select    +/-/: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

## Quick Boot

Allows BIOS to skip certain tests while booting. This will decrease the needed to boot the system.

## Boot Up NumLock Status

The default value is On.

**On** (default) Keypad is numeric keys.

**Off** Keypad is arrow keys.

## ACPI APIC Support

Include ACPI APIC table pointer to RSDT pointer list.

## MPS Revision

This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use.

## Quiet Boot

The optional settings are Enabled and Disable.

Disabled: Display normal POST message.

Enabled: Displays OME logo instead of POST message.

## 3-5-1 CPU Configuration

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

### CPU Configuration

Module version: 14.14 AGESA Version: 6.1.3.0 Physical Count: 1 Logical Count: 4 AMD Phenom™II X4 945 processor Revision: C2 Cache L1: 512KB Cache L2 : 2048KB Cache L3 : 6MB Speed : 3000MHz, NB Clk : 200MHz Able to Change Fre: YES UCode Path level: 0x100086 GART Error Reporting Microcode Update Secure Virtual Mchine Mode AMD Cool&Quiet Control C1E Support ACPI SRAT Table	Help Item
	Enable or Disabled the building of ACPI SART Table
↑↓ : Move    Enter: Select    +/-/: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

## 3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

### Advanced Chipset Features

Memory Configuration	Press Enter	Help Item
Internal Graphics Config	Press Enter	
PCI Express Configuration	Press Enter	Options Disabled Enabled
HDMI Audio	Enabled	
NB Power Management Features	Auto	
Primary Video Controller	PCI-GFX0-GPP-IGFX	
↑↓ : Move    Enter: Select    +/-/: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults		

## NB Power Management Features

Dynamic clock gating for IOC/NT/MCU/CFG.

---

## HDMI Audio

Use this item to select HDMI audio, the optional settings are: Disabled and Enabled. Default is Enabled.

## Primary Video Controller

This item is for user to choose primary video controller.

## 3-6-1 Memory Configuration

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Memory Configuration

DRAM Timing Mode	Auto	Help Item
Memory CLK:	800MHz, N/A	
CAS Latency (Tcl):	6CLK N/A	Options Auto DCT0
RAS/CAS Delay(Trcd):	6CLK, N/A	
Row Precharge Time(Trp):	6 CLK, N/A	
Min Active RAS(Trrd):	15CLK, N/A	
RAS/RAS Delay(Trrd):	4CLk, N/A	
Row Cycle(Trc)	21 CLK, N/A	
Write Recover Time(Twr)	6CLK, N/A	
Bank Interleaving	Auto	
Channel Interleaving	XOR of Address b	
Enabled clock to All DIMMs	Disabled	
Mem CLK Tristate C3/ATL VID	Disabled	
Memory Hole Remapping	Enabled	
DCT Unganged Mode	Always	
Power Down Enabled	Enabled	
↑↓ : Move      Enter: Select      +/-: Value      F10: Save      ESC: Exit      F1: General Help		
F5: Discard Charges      F6: Standard Defaults      F7: Optimized Defaults		

### Bank Interleaving

Use this item to enable bank memory interleaving.

### Enable Clock to ALL DIMMs

Enable unused clocks to DIMMS when memory slots are not populated.

### Mem CLK Tristate during C3 and Alt VID.

Enable and disable Mem CLK Tri-stating during C3 and Alt VID

### Memory Hole Remapping

Enable Memory Remapping around Memory Hole.

### DCT Unganged Mode

This allows selection of unganged DRAM MODE (64- bit width).

Auto=Ganged Mode; Always= Unganged Mode.

### Power Down Enable

Enable or Disable power down mode.

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## 3-6-2 Internal Graphics Configurations

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Internal Graphics Configurations

Internal Graphics Mode	UMA+SIDEPORT	Help Item
UMA Frame Buffer Size	Auto	Options
SIDEPORT Clock Speed	667MHz	Disabled
GFX Engine Clock Override	Disabled	UMA
UMA-SP Interleave Mode	Auto	SIDEPORT
SP Power Management	Auto	UMA+SIDEPORT
SP NB Termination	Auto	
SP Memory Termination	Auto	
SP CMD Hold	Auto	
SP DATA Hold	Auto	
Surround View	Auto	
FB Location	Above 4G	
Debug Option	Press Enter	
↑↓ : Move    Enter: Select    +/-: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults		

### UMA Frame Buffer Size

The optional settings are: Auto; 32MB; 64 MB; 128 MB; 256 MB and 512 MB.

### Surround View

The item is for Hyprid CrossFire function. The optional settings are: Enabled; Disabled.

### Debug Option

There are some sub-item to set, such as Bank Mapping Control, UMA Address Swizzle Control, SP Size Override, Side Port Calibration and VBIOS Type.

## 3-6-3 PCI Express Configuration

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
PCIExpress Configuration

PCI Express Configuration	Help Item
GPP Slots Power Limit, W	Options
Port #02 Features	Auto
Port #04 Features	Enabled
NB-SB Port Features	Disabled
↑↓ : Move    Enter: Select    +/-: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

### Port #02 Features ~ Port #04 Features

Press Enter and set values in the sub-items as Ge2 High Speed Mode, Link ASPM,.

### NB-SB Port Features

Press Enter and set values in the sub-items as NB-SB Link ASPM,;NP NB-SB VC1 Traffic Support and Link Width.

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## 3-7 Integrated Peripherals

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Integrated Peripherals

Onboard SATA Device	Press Enter	Help Item
Onboard Device Control	Press Enter	
Super IO Configuration	Press Enter	
↑↓ : Move	Enter: Select	+/-/: Value
F5: Discard Charges	F10: Save	ESC: Exit
	F6: Standard Defaults	F1: General Help
		F7: Optimized Defaults

### 3-7-1 Onboard SATA Device

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Onboard SATA Device

Onchip SATA Channel	Enter	Help Item
Onchip SATA Type	Native IDE	
SATA IDE Combined Mode	Enabled	Select the time out value for detecting ATA/ATAPI device(s)
Hard Disk Write Protest	Disabled	
IDE Detect Time Out(Sec)	35	
↑↓ : Move	Enter: Select	+/-/: Value
F5: Discard Charges	F10: Save	ESC: Exit
	F6: Standard Defaults	F1: General Help
		F7: Optimized Defaults

#### OnChip SATA Channel

Press Enter to enable or disable CnChip SATA Channel.

#### On Chip SATA Type

Press Enter to select the SATA type. The optional settings are: Native IDE; RAID; AHCI; Legacy IDE; IDE→AHCI.

### 3-7-2 OnChip Device Control

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
OnChip Device Control

Onboard PCIE LAN Device	Enabled	Help Item
Onboard Lan BootRom	Disabled	
HD Audio Azalia Device	Enable	Options
USB configuration	Press Enter	Disabled
		Enabled
↑↓ : Move	Enter: Select	+/-/: Value
F5: Discard Charges	F10: Save	ESC: Exit
	F6: Standard Defaults	F1: General Help
		F7: Optimized Defaults

#### Onboard PCI E Lan

Use this item to enable or disable Onboard PCI E Lan

#### HD Audio Azalia Device

This item allows you to decide to enable/disable the chipset family to support HD Audio. The optional settings are: Auto; Enabled and Disabled.

#### USB Configuration

Press Enter to set values for sub-items as: Legacy USB Support, USB 2.0 Controller Mode BIOS EHCI Hand-OFF.

---

---

### 3-7-3 Super IO Configuration

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

#### Super IO Configuration

Configure F71863 Super IO Chipset		Help Item
Power On By Keyboard	Disabled	Allows BIOS to Enable or Disable Floppy Controller
Power On By Mouse	Disabled	
Serial Port 1 Address	3F8/IRQ4	
Serial Port 2 Address	2F8/IRQ3	
Serial Port 2 Mode	IrDA (1.6 US)	
IR Duplex Mode	Half Duplex	
IRTX pin Select	Normal	
IRRX Select	Normal	
IR TX to RX Delay Select	No Delay	
IR RX to TX Delay Select	No Delay	
PWRON After PWR-Fail	Always PFF	
↑↓ : Move      Enter: Select      +/-: Value      F10: Save      ESC: Exit      F1: General Help		
F5: Discard Charges      F6: Standard Defaults      F7: Optimized Defaults		

#### Serial Port1 /2 Address

Use this item to select serial port address for serial port one.

#### Serial Port2 Mode

The optional settings are: Normal; IrDA (1.6 ns); IrDA(3/16 bit).

#### IrDA Duplex Mode

This item allows BIOS to select full or half duplex for serial port 2(IR Mode).The optional settings are: Full Duplex; Half Duplex.

#### IrTX Pin Select

The optional settings are: Normal and Inverse.

This item allows BIOS to select transmit pin in a normal condition or inverse the IRTX(IR Mode).

#### IrRX Pin Select

The optional settings are: Normal and Inverse.

This item allows BIOS to select receiver pin in normal condition or inverse the IRRX(IR mode).

#### IRTX to RX Delay Select

The optional settings are: No Delay and Reception Delay.

This item allows BIOS to select IR from RX to TX 4 characters time delay for serial port2(IR mode)

#### IRRX to TX Delay Select

The optional settings are: No Delay and Transmission Delay.

### 3-8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.



**CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.**  
**Power Management Setup**

Power Management Feature		Help Item
Power management/APM	Enabled	Disable/Enable RTC to generate a wake event
Suspend Time Out	Disabled	
Power Button Mode	On/Off	
Video Power Down Mode	Suspend	
Hard Disk Power Down MODE	Suspend	
Hard Disk Time Out (Minute)	Disabled	
Restore on AC Power Loss	Disabled	
Power On by PCI Card	Disabled	
Wake-up by PCIE	Disabled	
RTC Resume	Disabled	
↑↓ : Move    Enter: Select    +/-/: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults		

### Power Management/APM

Use this item to enable or disable AMI based power management and APM support.

### Suspend Time Out

If it is set Enabled and no activity during this time period, the BIOS will place the system into suspend low power state. The optional settings are: Enable; 1~64 minutes.

### Power Button Mode

The optional settings are: On/Off; Suspend.

### Video Power Down Mode

The optional settings are: Disabled; Standby and Suspend.

### Restore on AC Power Loss

The optional settings are: Disabled; Power on; Power Off and last state.

## 3-9 Miscellaneous Control

**CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.**  
**Miscellaneous Control**

Advanced PCI/PnP Setting	Help Item
<b>WARNING: Setting wrong values in below sections may cause system to malfunction</b>  Clear NVRAM <b>No</b> Plug &Play O/S                      No PCI LATENCY Timer                      64 Allocate IRQ to PCI VGA                      Yes Palette Snooping                      Disabled PCI IDE Bus Master                      Disabled Off Board PCI/ISA IDE Card                      Auto IRQ Resources                      Press Enter	<b>Options</b> Clear NVRAM during System Boot
↑↓ : Move    Enter: Select    +/-/: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

### Plug &Play O/S

The optional settings are: No; Yes

No: Let the BIOS configure all the devices in the system.

Yes: Let the operating system configure Plug and Play devices, not required for boot if your system has a Plug and Play system.

### Allocate IRQ for PCI VGA

The optional settings are: No; Yes.

Yes: Assigns IRQ to PCI VGA card if card requests IRQ.

No: Does not assign IRQ to PCI VGA card even card requests an IRQ.

### Palette Snooping

The optional settings are: Enabled; Disabled.

Enable: inform the PCI device that an ISA graphics devices is installed in the system so the card will function correctly.

### PCI IDE Bus Master

The optional settings are: Enabled; Disabled.

Enable: BIOS uses PCI busmastering for reading/writing IDE devices.

### Offboard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

## 3-10 PC Health Status

This section shows the Status of you CPU, Fan, and Warning for overall system status. This is only available if there is Hardware Monitor onboard.

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
PC Health Status

PC Health Status		Help Item
Smart FAN Configuration	Press Enter	
H/W Health Function	Enabled	
CPU Temperature:	59°C/138°F	
System Temperature:	40°C/104°F	
CPUFAN Speed:	2923RPM	
SYSFAN1 Speed:	N/A	
SYSFAN2 Speed:	N/A	
VLDT	1.160v	
VDIMM	1.599V	
Vcore	1.360v	
VNB	1.160V	
↑↓ : Move      Enter: Select      +/-: Value      F10: Save      ESC: Exit      F1: General Help		
F5: Discard Charges      F6: Standard Defaults      F7: Optimized Defaults		

### H/W Health Function,

it displays information list below when set as below. The choice is either Enabled or Disabled.

CPU Temperature/ System Temperature/ CPUFAN1 Speed /SYSFAN1 Speed/SYSFAN2 Speed/VLDT/VDIMM/VCore/VNB

This will show the CPU/ /System voltage chart and FAN Speed, etc.

### 3-10-1 Smart FAN Configuration

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
Smart FAN Configuration

Fan1 Mode Setting		Auto Fan by Duty	Help Item			
Temperature1 Limit of Hig		050	Fan Configuration Mode Setting			
Temperature1 Limit of Sec		040				
Temperature1 Limit of Thi		030				
Temperature1 Limit of Low		020				
↑↓ : Move		Enter: Select	+/-: Value	F10: Save	ESC: Exit	F1: General Help
F5: Discard Charges		F6: Standard Defaults	F7: Optimized Defaults			

---

---

### Smart FAN Configurations FAN1 Mode Setting

The optional settings are: Auto Fan by RPM; Auto Fan by Dutycycle; Manual Mode by RPM and Manual Mode by Dutycycle.

## 3-11 Thermal Throttling Options

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

### Thermal Throttling Options

CPU Thermal-Throttling	Enabled	Help Item
		Options Disabled Enabled
↑↓ : Move      Enter: Select      +/-: Value      F10: Save      ESC: Exit      F1: General Help F5: Discard Charges      F6: Standard Defaults      F7: Optimized Defaults		

#### CPU Thermal Throttling

Use this item to enable or disable CPU thermal Throttling. The optional settings are: Enable; Disabled. When set as Enabled, the two following items will show.

## 3-12 Power User Overclock Setting

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.

### Power User Overclock Setting

AMD Overclocking Configuration		Help Item
CPU/HT Reference Clock(MHz)	200	
PCI E Reference Clock (MHz)	100	
SB Reference Clock(MHz)	100	
Processor Frequency Multipli	Auto	
CPU-NB FID	Auto	
Over Voltage Configuration		
AOD Compatibility	Disabled	
Processor Voltage	Disabled	
VDIMM Select	1.60v	
HT Link Speed	Auto	
HT Link Width	Auto	
DRAM Command Rate	2T	
Memory Clock Mode	Auto	
↑↓ : Move      Enter: Select      +/-: Value      F10: Save      ESC: Exit      F1: General Help F5: Discard Charges      F6: Standard Defaults      F7: Optimized Defaults		

#### CPU/HT Reference Clock

Use this item to set CPU/HT Reference Clock. The optional setting range is:190~400 MHz.

---

### PCI E Reference Clock

The enabled setting is 100.

### SB Reference Clock

The enabled setting is 100.

### Processor Voltage

The optional settings are: Auto; 0.800V~1.350V.

### AOD Compatibility

Choose Enabled means only AMD over drive can adjust voltage

Choose Disabled means only BIOS can adjust voltage

### Memory Clock Mode

The optional settings are: Auto; Limit and Manual.

## 3-13 BIOS Security Features

CMOS Setup Utility-Copyright(C)1985-2005 American Megatrends. Inc.  
BIOS Security Features

Security Settings	Help Item
Supervisor Password: Not Installed User Password: Not Installed Change Supervisor Password Press Enter Change User Password Press Enter Boot Sector Virus Protection Disabled	Install or change the password
↑↓ : Move    Enter: Select    +/-: Value    F10: Save    ESC: Exit    F1: General Help F5: Discard Charges    F6: Standard Defaults    F7: Optimized Defaults	

## 3-14 Load Optimal Defaults/ Load Standard Defaults

### Load Optimal Defaults

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Load Optimal Defaults?  
【OK】    【Cancel】

Pressing <OK> loads the default values that are factory settings for optimal performance system operations.

### Load Standard Defaults

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Load Standard Defaults?  
【OK】    【Cancel】

Pressing <OK> loads the default values that are factory settings for stable performance system operations.

---

---

### 3-15 Save Changes and Exit / Discard and Exit

#### Save Changes and Exit

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Save Configuration changes and exit setup?  
【OK】                      【Cancel】

Pressing <OK> save the values you made previously and exit BIOS setup.

#### Discard Changes and Exit

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Discard Changes and Exit Setup?  
【OK】                      【Cancel】

Pressing <OK> to leave BIOS setting without saving previously set values.

<b>Notice!</b>	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.
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## Chapter 4

### DRIVER & FREE PROGRAM INSTALLATION

Check your package and there is A MAGIC INSTALL CD included. This CD consists of all DRIVERS you need and some free application programs and utility programs. In addition, this CD also include an auto detect software which can tell you which hardware is installed, and which DRIVERS needed so that your system can function properly. We call this auto detect software MAGIC INSTALL.

#### **MAGIC INSTALL supports Windows 2K/XP/Vista/Windows 7**

Insert CD into your CD-ROM drive and the MAGIC INSTALL Menu should appear as below. If the menu does not appear, double-click MY COMPUTER / double-click CD-ROM drive or

click START / click RUN / type X:\SETUP.EXE (assuming X is your CD-ROM drive).



From MAGIC INSTALL MENU you may take 11 selections:

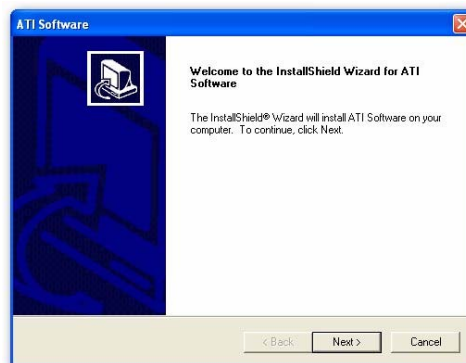
- |               |   |
|---------------|---|
| 1. ATI        | install ATI integrated driver pack        |
| 2. SOUND      | install HD codec audio driver             |
| 3. LAN        | install gigabit Ethernet NIC driver       |
| 4. RAIDDISK   | install ATI SATA driver and utility       |
| 5. Norton     | install NORTON 2009 anti-virus program    |
| 6. PC-Health  | install My Guard hardware monitor utility |
| 7. FUSION     | download FUSION drivers and tools         |
| 8. HDMI       | install ATI HDMI audio driver             |
| 9. OVER CLOCK | install overclock driver utility          |
| 10. BROWSE CD | to browse the contents of the CD          |
| 11. EXIT      | to exit from MAGIC INSTALL menu           |

---

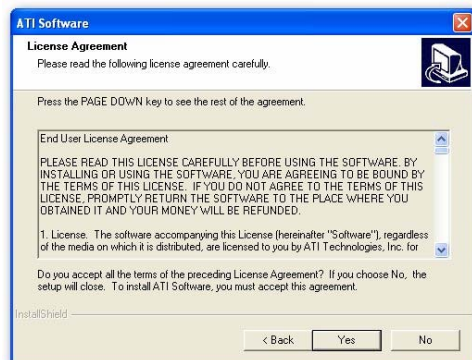
## 4-1 Install ATI Driver Pack



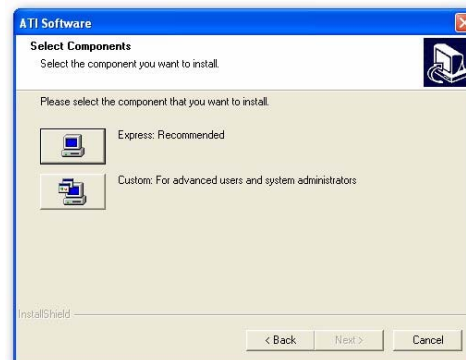
1. Click ATI when the MAGIC INSTALL MENU appears.



2. Click NEXT when ATI software driver pack appears.



3. Click "Yes" to accept the license agreement and start installation..



4. Click Express, recommended.



5. Click Continue Anyway.



6. Finish the installing.

**NOTE: Please upgrade your Windows XP to Service Pack 1 / Windows 2000 to Service Pack 4 or later before you install the HD Audio CODEC driver**

---

## 4-2 Sound Install HD Codec Audio Driver



1. Click SOUND when MAGIC INSTALL MENU appears



2. Click NEXT When Realtek High Definition Audio driver windows appear



3. Click FINISH and restart your computer



4. Manual Sound Effect Setting



5. Devices and mixer setting



6. Audio input and output setting.



7. Microphone effect setting.



8. 3D demo setting.



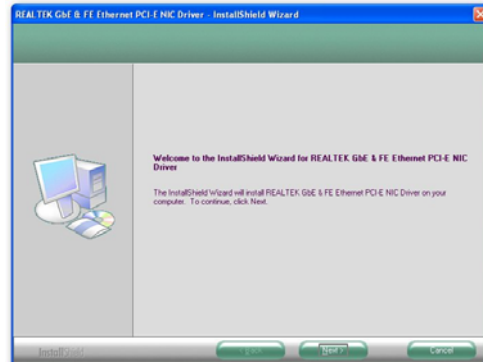
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**NOTE:** Please upgrade your Windows XP to Service Pack 1 / Windows 2000 to Service Pack 4 or later before you the HD Audio CODEC driver.

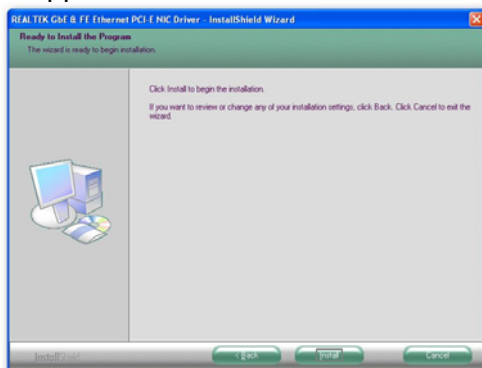
## 4-3 LAN Install Gigabit Ethernet NIC Driver



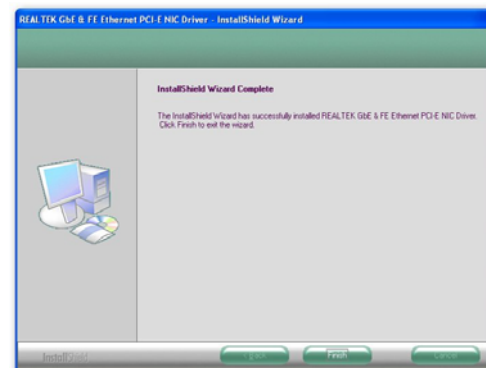
1 Click LAN when MAGIC INSTALL MENU appears



2. Click Next .



3 Click Install

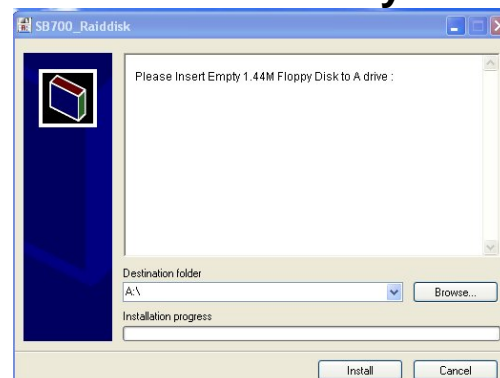


2. Finish.

## 4-4 RAIDDISK Install ATI SATA Driver and Utility



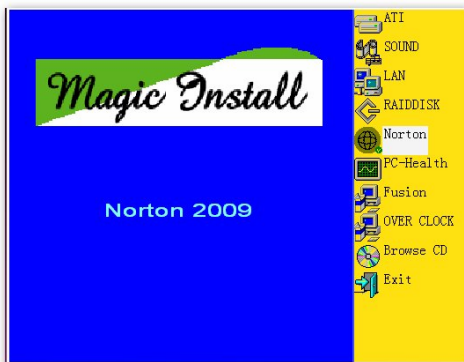
1 Click RAIDDisk when MAGIC INSTALL MENU appears



2. Copy the files to floppy disk and restart the computer with floppy disk as the first booting disk and then follow the steps shown on the screen to finish RAID function settings.

---

## 4-5 Norton Install Norton 2009 Anti-virus program



1 Click NORTON when MAGIC INSTALL MENU appears

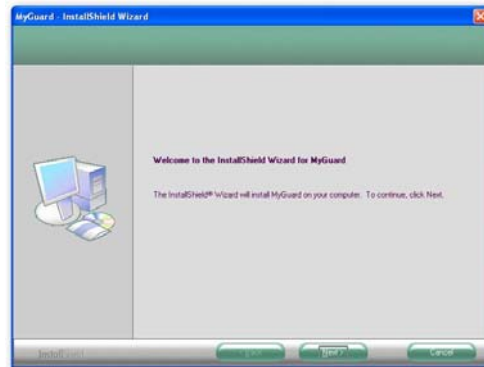


2. Please select Agree&install.

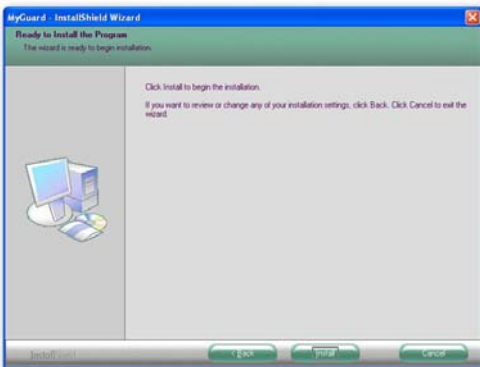
## 4-6 PC-Health Install MyGuard Hardware Monitor Utility



1. Click PC-HEALTH when MAGIC INSTALL MENU appears



2. Click Next on Install shield wizard Window appears



3. Click Install to begin the installation.



4. Click Finish to complete the installation.

## 4-7 Fusion Download Fusion Drivers and Tools

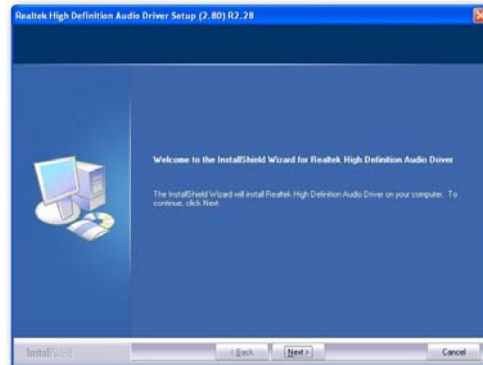
Click Fusion when Magic Install menu appears to visit AMD official website

[http://game.amd.com/us-en/drivers\\_fusion.aspx?p=1](http://game.amd.com/us-en/drivers_fusion.aspx?p=1) to download fusion drivers and tools.

Please make sure that you net is connected well and you operating system is Windows Vista before running downloaded programs.

---

## 4-8 HDMI Install ATI HDMI Audio Driver



1. Click HDMI when MAGIC INSTALL MENU appears

2. Click Next on Install shield wizard Window appears



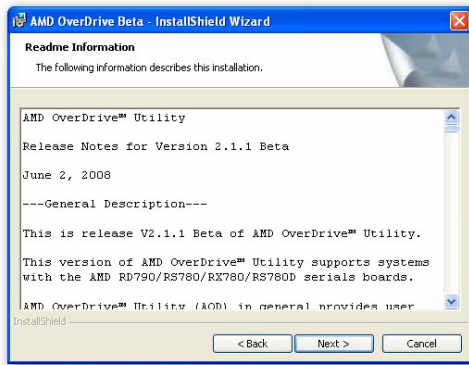
3. Choose finish.

## 4-9 OVERCLOCK Install OVERCLOCK Drive Utility



1. Click OVER CLOCK when MAGIC INSTALL MENU appears

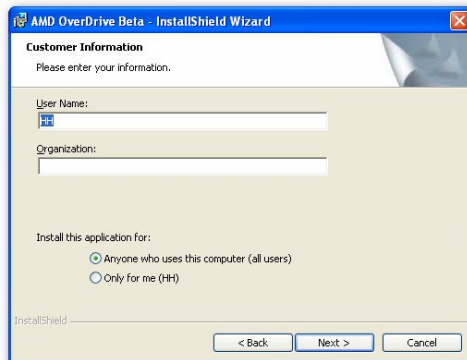
2. Click Next



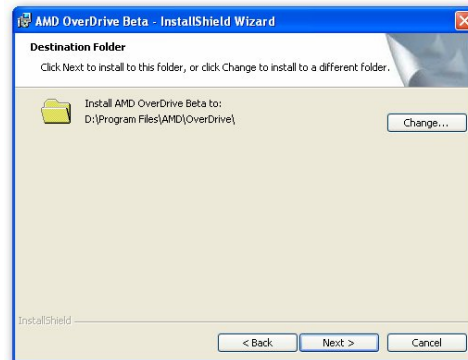
3. Read the information, then click next.



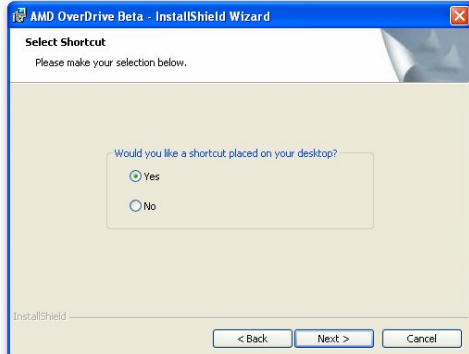
4. Choose "I accept the terms in the license agreement".



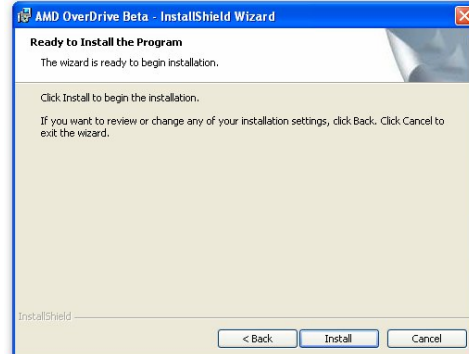
5. Choose "Anyone who use this computer" Click Next.



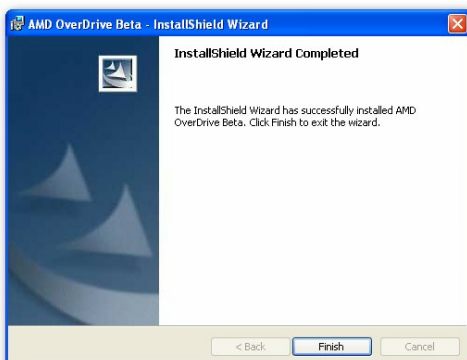
6. The information describe the installation, Click Next.



7. Choose Yes and Next.



8. Ready to install the program, click Install.



9. Finish the installation.

---

## 4-10 How to Update BIOS

STEP 1. Prepare a boot disc. (You may make one by click START click RUN type  
SYS A: click OK)

STEP 2. Download upgrade tools and the latest BIOS files of the motherboard from  
official website and then make a copy of it to your bootable floppy disk after  
decompressing these files

STEP 3. Insert the disk into A: ,start your computer and then type in  
"A:\xxxxxx.BAT"(xxxxxxx being the file name of the latest BIOS )

STEP 4. Type Enter to update and flash the BIOS. The system will restart  
automatically when BIOS is upgraded.

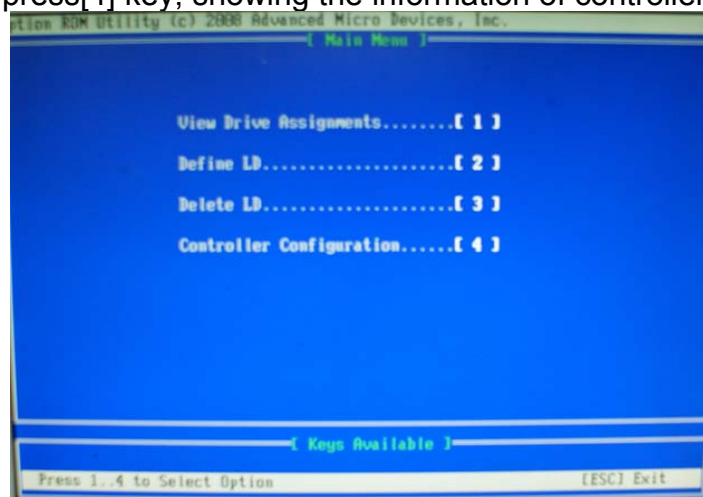
## 4-11 AMD Platform RAID Function Installation

Please set these choice in the BIOS as RAID : [BIOS setup \Integrated Peripherals](#)  
[\Onchip SATA Device \ Onchip SATA Type](#). When the below figures appeared, please  
press [Ctrl-F] into figure 2



[figure1]

Function: press[1] key, showing the RAID; press [2] key , building RAID; press [3] key,  
delete the RAID; press[4] key, showing the information of controller.



[figure2]

press[1] key , showing the RAID , as the below figure



[figure3]

Press [2] key, the interface of RAID, as figure 4.

RAID function:

#### RAID 0 / RAID 1 / RAID 10



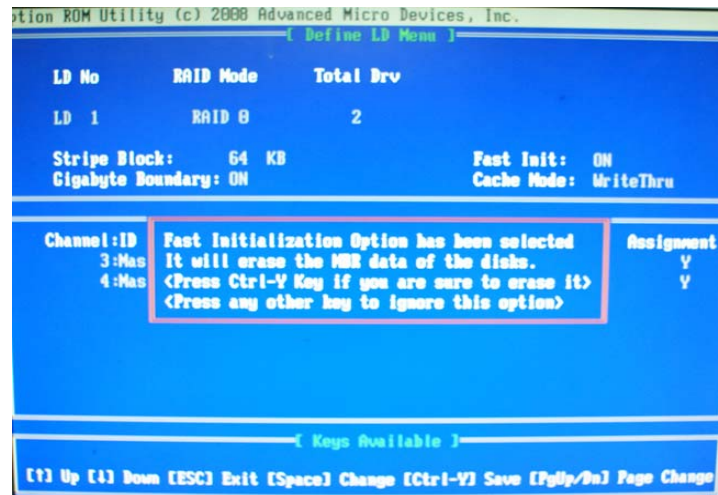
[figure4]

Choose LD 1 then press Enter.

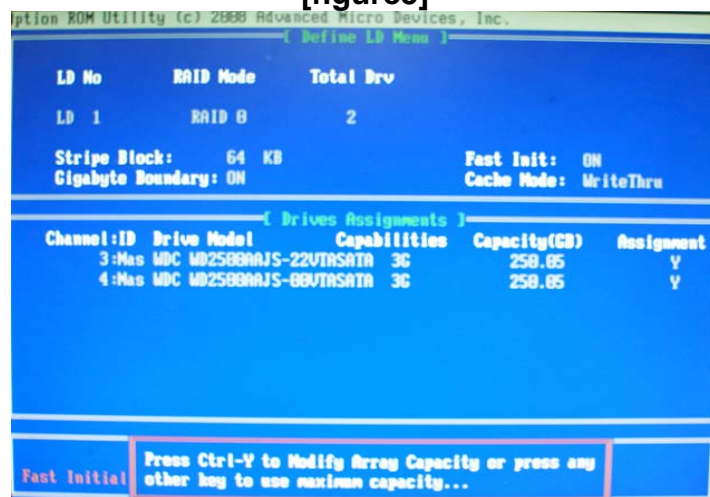
Take Raid0 for example, use [↑] [↓] to shift the cursor, press space key to change the choice, press [Ctrl-Y] to keep.

Set Assignment mode as [Y], press [Ctrl-Y] to keep, then figure 5 appeared, erase the MBR. choose [Ctrl-Y], figure 6 appeared. Press any key, finished the RAID.



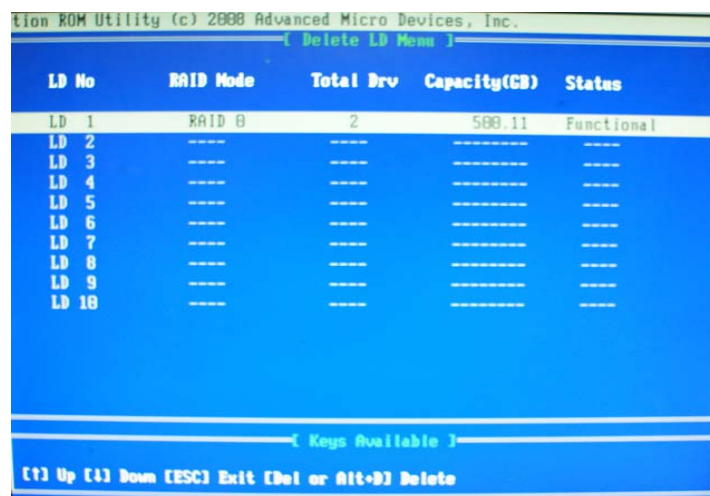


[figure5]



[figure6]

Press [3], delete the RAID mode, as figure 7. press [Delete] will delete the array. As figure 7 .



[figure7]

Press [4], showing the information of controller, as figure 8.



[figure8]

### **Making RAID driver diskette before Install WindowsXP/2000/Vista/Windows7**

Before you install the operating system, you will need to make a RAID driver diskette before you start to install the Operating System.

#### **How to make a RAID driver diskette?**

- 1: Insert the diskette which is being formatted in floppy drive on a system which can start OS.
- 2: After booting OS insert the bundle CD in your CD-ROM
- 3: Copy all the files from \NF-orce4\RAIDDisk to floppy diskette

Once you have the SATA driver diskette ready, you may start to install Windows XP or Windows 2000 on your System.

#### **Installation of Operating System**

For installation of Microsoft Windows series operating system, please insert operating system CD into the CD-ROM drive. Then remove the floppy diskette, and boot the system. At the very beginning, you will see the message at the bottom of screen, "Press F6 if you need to install a third party SCSI or RAID driver...."

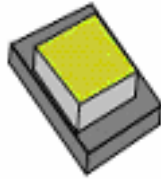
At this moment, please press <F6> key and follow the instructions of operating system for the proper installation.



---

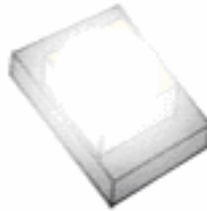
---

## 4-12 G.P.I Function LED Display:



**PP\_LED3**

Lights off. It means the motherboard in the G.P.I mode. CPU works with the low power consumption.



**PP\_LED3**

Lights on. It means that the CPU works with high power consumption.

---

---

## Appendix I

### Subject 1: Regarding the Application of 3-Phase or 3+1 Phase Power Supply Mold



As a result of the increasing power consumption demand from many AMD CPUs in current market, we suggest not to use a CPU that demands more than 65W power consumption at work for an AMD CPU compliant board that comes with power supply design as 3 phase or 3+1 phase mold and MOSFET design as working in High SideX1 and Low SideX1 mold so as to avoid MOSFET getting burned or other phenomena like a halted system or system instability. So please take notice of the CPU you are using and make sure that it is one that demand not more than 65 W to ensure long-term working order.

#### Note:

1. The relation between CPU Power Consumption Amount and Power Phase: depending on difference in voltage rating, one-phase of power can provide 25~30W to the motherboard.
2. 3- Phase Power Supply Mold: motherboard with 3 inductances for CPU power supply, and each inductance carries with it 2 MOSFET (6 MOSFETs in total) (Figure1); 3+1–Phase Power Supply Mold: motherboard with 4 inductances for CPU power supply, and each inductance carries with it 2 MOSFET (8 MOSFETs in total) (Figure2)

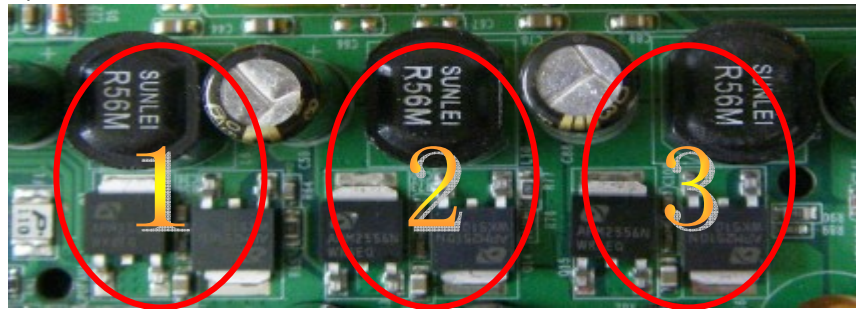


Figure 1

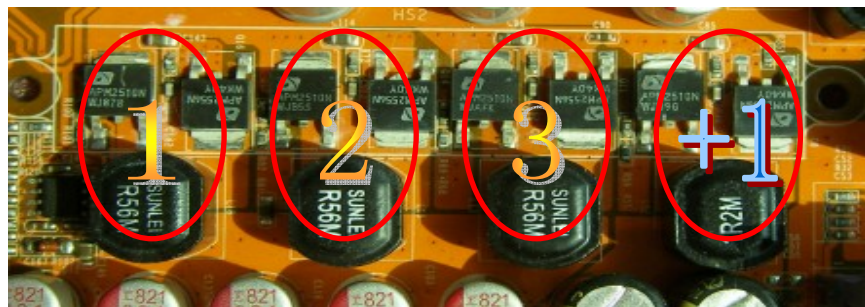


Figure 2

---

---

### Solution:

We recommend users choose motherboards with power design of 4-phase, 4+1 phase or more for CPUs that demand 89W or 95W power consumption.

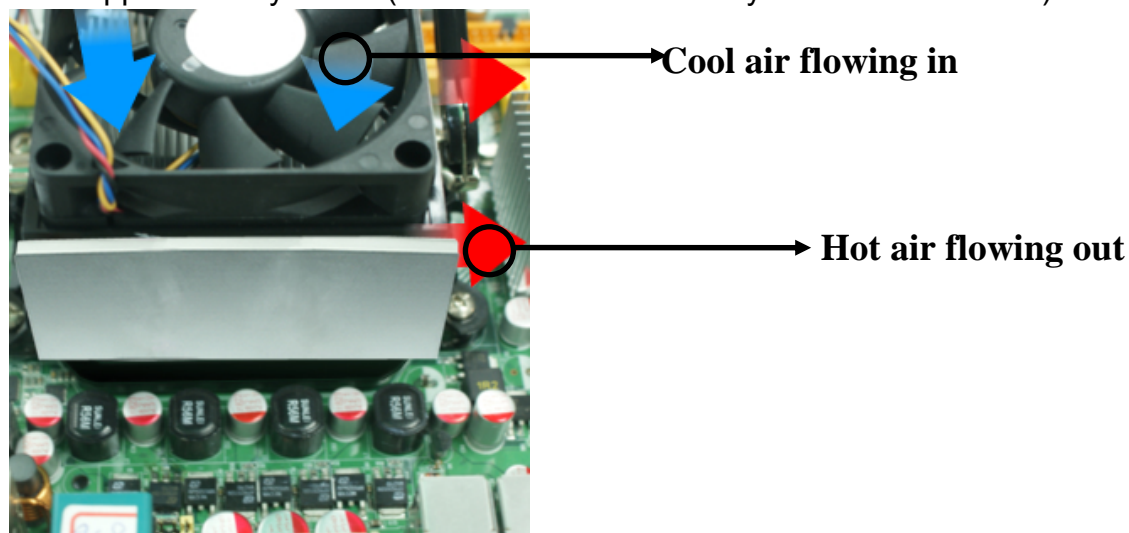
We recommend users choose motherboards with power design of 5-phase, 5+1 phase or more for CPUs that demand 125W or 140W power consumption.

### Subject 2: Suggestion on choosing electric fan

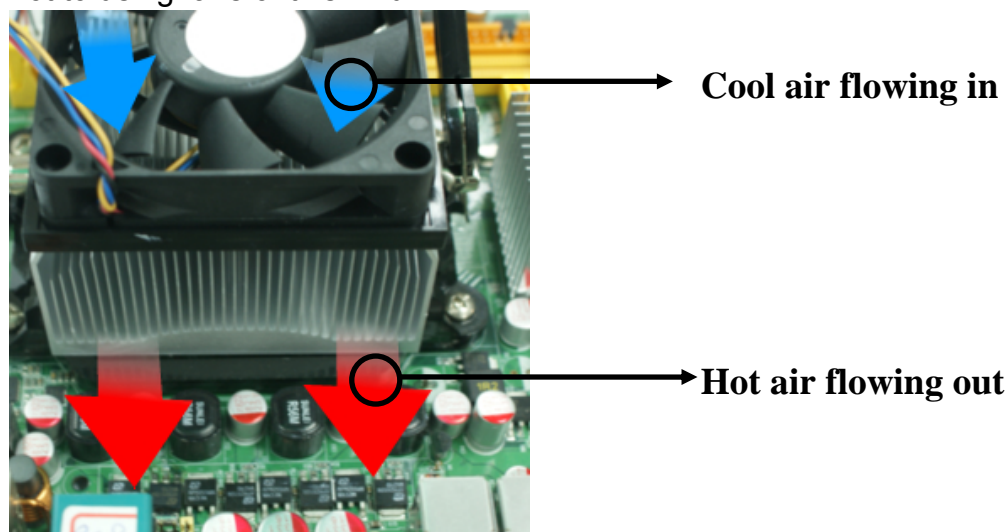


Both the amount of electric current to MOSFET and the heat produced from the motherboard go up as AMD's CPU power consumption increases. In this case we recommend users select a CPU fan with air outlet towards MOSFET so that CPU fan can carry away heat produced by MOSFET, for better heat dissipation effects.

At the same time we suggest using well-ventilated cases to maintain temperature as 38°C approximately inside.( 38°C is recommended by CPU manufactures)



**Figure 1----** CPU Fan can not blow off the heat produced by MOSFET. We suggest not to using fans of this kind



**Figure 2----** CPU Fan can blow off the heat produced by MOSFET. We suggest using fans of this kind